



BSI Standards Publication

**External fire exposure of roofs
and roof coverings – Extended
application of test results from
CEN/TS 1187**

National foreword

This Published Document is the UK implementation of CEN/TS 16459:2013.

The UK participation in its preparation was entrusted to Technical Committee FSH/22/-/8, Fire resistance tests for external fire exposure for roofs.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

© The British Standards Institution 2013. Published by BSI Standards Limited 2013

ISBN 978 0 580 77465 2

ICS 13.220.50; 91.060.20

Compliance with a British Standard cannot confer immunity from legal obligations.

This Published Document was published under the authority of the Standards Policy and Strategy Committee on 31 December 2013.

Amendments issued since publication

Date	Text affected
------	---------------

ICS 13.220.50; 91.060.20

English Version

External fire exposure of roofs and roof coverings - Extended application of test results from CEN/TS 1187

Exposition des toitures et des couvertures à un feu extérieur - Application étendue des résultats d'essai de la CEN/TS 1187

Beanspruchung von Bedachungen durch Feuer von außen - Erweiterter Anwendungsbereich der Prüfergebnisse aus CEN/TS 1187

This Technical Specification (CEN/TS) was approved by CEN on 14 April 2013 for provisional application.

The period of validity of this CEN/TS is limited initially to three years. After two years the members of CEN will be requested to submit their comments, particularly on the question whether the CEN/TS can be converted into a European Standard.

CEN members are required to announce the existence of this CEN/TS in the same way as for an EN and to make the CEN/TS available promptly at national level in an appropriate form. It is permissible to keep conflicting national standards in force (in parallel to the CEN/TS) until the final decision about the possible conversion of the CEN/TS into an EN is reached.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION
 COMITÉ EUROPÉEN DE NORMALISATION
 EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

Contents

Page

Foreword.....	5
Introduction.....	6
1 Scope.....	8
2 Normative references.....	8
3 Terms and definitions.....	9
4 Product and end-use application parameters for roof coverings/roof systems.....	11
5 Extended application.....	12
5.1 General principles for extended application for roof coverings/roof systems.....	12
5.2 Extended application by additional tests.....	13
5.2.1 Additional tests on one product/end-use application parameter.....	13
5.2.2 Additional tests on several product/end-use application parameters.....	13
5.3 Extended application by calculation.....	14
5.4 Guidance on the use of historical test data.....	14
6 Influence of product parameters and end-use application parameters on external exposure to fire test performance.....	14
7 General guidance to the annexes for Application Rules.....	18
Annex A (normative) Application rules for test results from CEN/TS 1187 test 1, per product group and/or components.....	21
A.1 General.....	21
A.2 General rules, valid for every product within a product group and/or component.....	23
A.3 Product groups.....	24
A.3.1 Slates and tiles.....	24
A.3.1.1 slates and tiles, non-metallic.....	24
A.3.1.2 Metallic tiles.....	26
A.3.2 Small elements.....	27
A.3.2.1 General.....	27
A.3.2.2 Bitumen shingles.....	27
A.3.2.3 Miscellaneous small elements.....	29
A.3.3 Reinforced bitumen sheets.....	29
A.3.4 Plastic and rubber sheets.....	31
A.3.5 Roof-lights.....	33
A.3.6 Glazing systems.....	34
A.3.7 Profiled non-metallic sheets.....	34
A.3.7.1 Profiled fibre cement sheets.....	34
A.3.7.2 Profiled bitumen based sheets.....	34
A.3.7.3 Miscellaneous profiled non-metallic sheets.....	34
A.3.8 Composite metallic sandwich panels.....	34
A.3.9 Profiled metal sheets.....	34
A.3.10 Flat metal sheets.....	35
A.3.11 Liquid applied roof waterproofing kits.....	35
A.3.12 Miscellaneous.....	35
A.4 Components.....	35
A.4.1 Adhesive.....	35
A.4.2 Separating layer.....	36
A.4.3 Insulation layer.....	38
A.4.4 Vapour Barrier.....	41
A.4.5 Supporting deck.....	43
Annex B (normative) Application rules for test results from CEN/TS 1187 Test 2, per product group.....	45
B.1 General.....	45

B.2	General rules, valid for every product within a product group	46
B.3	Product groups	47
B.3.1	Slates and tiles	47
B.3.1.1	Non-metallic slates and tiles (reaction-to-fire-class A1 to A2-s3 d2 according to EN 13501-1)	47
B.3.1.2	Metallic tiles	49
B.3.2	Small elements (reaction-to-fire-class B-s1,d0 to F according to EN 13501-1)	49
B.3.2.1	General	49
B.3.2.2	Bitumen shingles	49
B.3.2.3	Miscellaneous small elements	49
B.3.3	Reinforced bitumen sheets	51
B.3.4	Plastic and rubber sheets	53
B.3.5	Roof-lights	54
B.3.6	Glazing systems	54
B.3.7	Profiled non-metallic sheets	54
B.3.7.1	Profiled fibre cement sheets	54
B.3.7.2	Profiled bitumen based sheets	55
B.3.7.3	Miscellaneous profiled non-metallic sheets	55
B.3.8	Composite metallic sandwich panels	55
B.3.9	Profiled metal sheets	55
B.3.10	Flat metal sheets	55
B.3.11	Liquid applied waterproofing kits	55
B.3.12	Miscellaneous	55
Annex C	(normative) Application rules for test results from CEN/TS 1187 test 3, per product group	56
C.1	General	56
C.2	General rules, valid for every product within a product group	58
C.3	Product groups	59
C.3.1	Slates and tiles	59
C.3.1.1	Non-metallic slates and tiles (reaction-to-fire-class A1 to A2 – s3 d2, according to EN 13501-1)	59
C.3.1.2	Metallic Tiles	61
C.3.2	Small elements (reaction-to-fire-class B – s1, d0 to F; according to EN 13501-1)	61
C.3.2.1	General	61
C.3.2.2	Bitumen Shingles	61
C.3.2.3	Miscellaneous small elements	63
C.3.3	Reinforced bitumen sheets	64
C.3.3.1	General	64
C.3.3.2	Typical roof waterproofing system	64
C.3.4	Plastic and rubber sheets	69
C.3.4.1	General	69
C.3.4.2	Typical roof waterproofing system	70
C.3.5	Roof-lights	75
C.3.6	Glazing systems	76
C.3.7	Profiled non-metallic sheets	76
C.3.7.1	Profiled fibre cement sheets	76
C.3.7.2	Profiled bitumen-based Sheets	76
C.3.7.3	Miscellaneous profiled non-metallic sheets	76
C.3.8	Composite metallic sandwich panels	76
C.3.9	Profiles metal sheets	76
C.3.10	Flat metal sheets	77
C.3.11	Liquid applied roof watering kits	77
C.3.12	Miscellaneous	77
Annex D	(normative) Application rules for test results from CEN/TS 1187 Test 4 for individual product groups	78
D.1	General	78

D.2	General EXAP rules for CEN/TS 1187 test 4, valid for every product within a product group	80
D.3	Product groups	81
D.3.1	Slates and tiles	81
D.3.1.1	Non-metallic slates and tiles	81
D.3.1.2	Metallic slates and tiles	84
D.3.2	Small elements	84
D.3.2.1	General	84
D.3.2.2	Bitumen shingles	84
D.3.2.3	Miscellaneous small elements, e.g. plastic tiles	87
D.3.3	Reinforced bitumen sheets (same as bitumen shingles)	88
D.3.4	Plastic and rubber sheets	91
D.3.5	Roof-lights	94
D.3.6	Glazing systems	94
D.3.7	Profiled non-metallic sheets	94
D.3.7.1	Profiled fibre cement sheets	94
D.3.7.2	Profiled bitumen based sheets	94
D.3.7.3	Miscellaneous profiled non-metallic sheets	94
D.3.8	Composite (including metal faced) sandwich panels	95
D.3.9	Profiled metal sheets	95
D.3.10	Flat metal sheets	95
D.3.11	Liquid applied roof water-proofing kits	95
D.3.12	Miscellaneous	95
	Bibliography	96

Foreword

This document (CEN/TS 16459:2013) has been prepared by Technical Committee CEN/TC 127 "Fire safety in buildings", the secretariat of which is held by BSI.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to announce this Technical Specification: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Currently in preview, click buy full version

Introduction

Fire tests on individual roofs/roof coverings are carried out in accordance with CEN/TS 1187. The results from these tests can then be classified in accordance with EN 13501-5.

In order to derive classifications for similar roofs/roof coverings based on the data determined from CEN/TS 1187, additional rules are needed.

These rules are direct application rules or extended application rules. Rules within the direct field of application of test results are given in EN 13501-5 (these rules correspond to CEN/TS 1187).

This document outlines a procedure to develop rules for extended application and lists application rules which have already been developed in Annexes A to D for test methods 1 to 4 from CEN/TS 1187, where Annex A is related to test method 1, Annex B relates to test method 2, and so forth.

Annexes A to D have been developed based upon the available information and the roof systems in the market. The objective of this document is to provide a methodology for optimising the number of tests required to cover the maximum field of application.

Whilst special attention has been focused on roofs typically comprising a support deck/substrate, vapour barrier, insulation layer(s), membranes/roof coverings, there will be occasions when other separating layers or intermediate layers will be needed to satisfy other roof characteristics. These layers should be included in the consideration of the roof/the roof covering being classified.

NOTE Tests 1, 3 and 4 are carried out on a roof construction, whereas test 2 is done on a roof covering with its substrate below.

The decision route from the diagram below shows ways to determine which procedure to follow.

The solid line is compulsory, whereas the dotted line is optional.

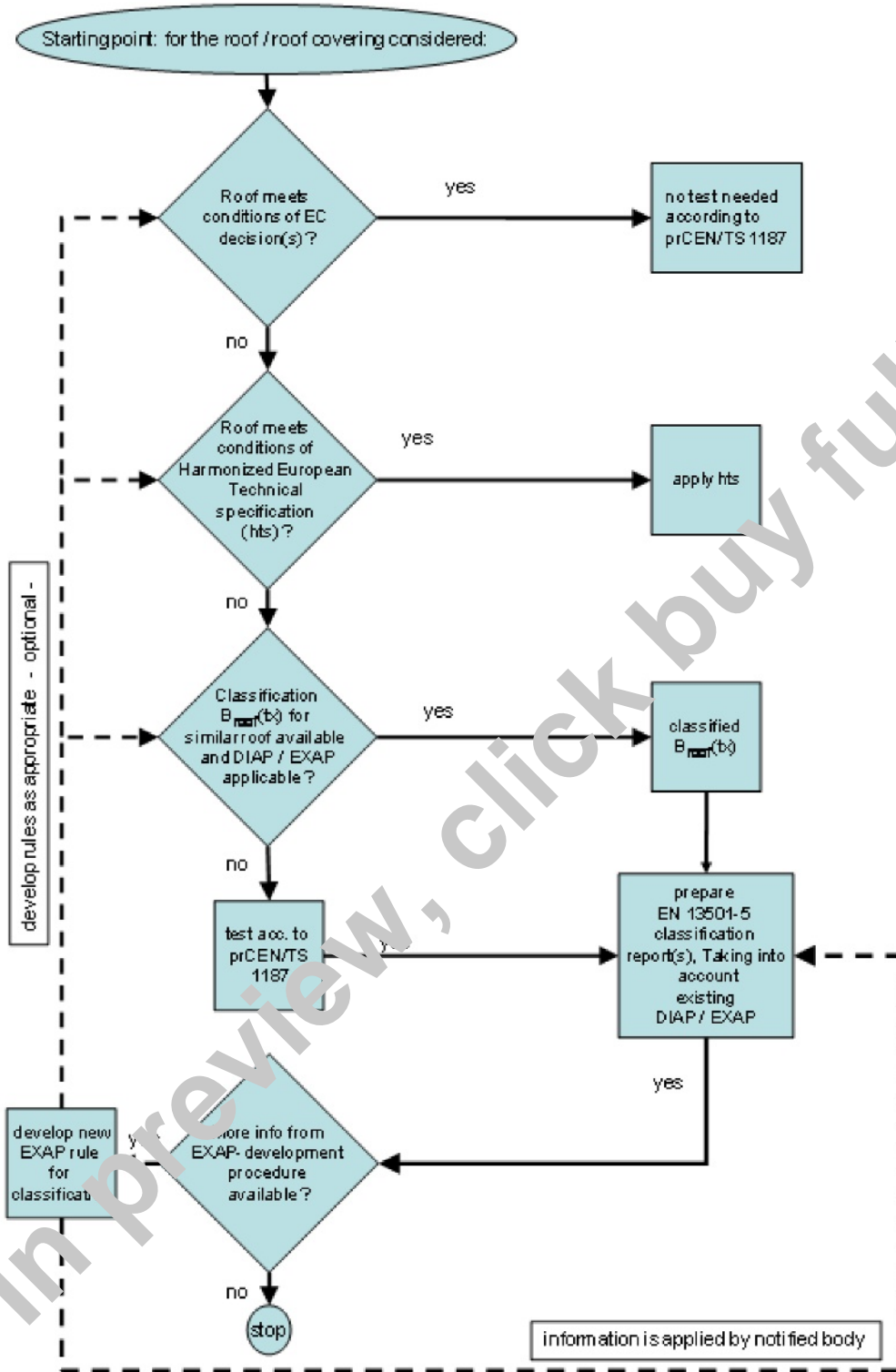


Figure 1 – Decision process on classification of roofs/roof coverings

1 Scope

This Technical Specification gives guidance on the process and development of extended fields of application using test results obtained from CEN/TS 1187 test 1 to 4, and included in test reports, and other relevant information in order to evaluate and classify the performance of roofs/roof coverings. This Technical Specification provides a methodology to consider the possible effect(s) on classification to EN 13501-5 from single or multiple changes to the individual product and end-use application parameters of the roof/roof covering.

Specific application guidance is given in Annexe A, Annex B, Annex C and Annex D for CEN/TS 1187 tests 1 to 4 respectively.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

CEN/TS 1187:2012, *Test methods for external fire exposure to roofs*

EN 490, *Concrete roofing tiles and fittings for roof covering and wall cladding - Product specifications*

EN 492, *Fibre-cement slates and fittings - Product specification and test methods*

EN 494, *Fibre-cement profiled sheets and fittings - Product specification and test methods*

EN 506, *Roofing products of metal sheet - Specification for self-supporting products of copper or zinc sheet*

EN 508-1, *Roofing products from metal sheet - Specification for self-supporting products of steel, aluminium or stainless steel sheet - Part 1: Steel*

EN 508-2, *Roofing products from metal sheet - Specification for self-supporting products of steel, aluminium or stainless steel sheet - Part 2: Aluminium*

EN 508-3, *Roofing products from metal sheet - Specification for self-supporting products of steel, aluminium or stainless steel sheet - Part 3: Stainless steel*

EN 534, *Corrugated bitumen sheets - Product specification and test methods*

EN 544, *Bitumen shingles with mineral and/or synthetic reinforcements - Product specification and test methods*

EN 1013 (all parts), *Light transmitting profiled plastic sheeting for single skin roofing*

EN 1304, *Clay roofing tiles and fittings - Product definitions and specifications*

EN 1840-2, *Flexible sheets for waterproofing - Determination of thickness and mass per unit area - Part 2: Plastic and rubber sheets*

EN 1843, *Prefabricated accessories for roofing - Individual roof lights of plastics - Product specification and test methods*

EN 12326-1, *Slate and stone products for discontinuous roofing and cladding - Part 1: Product specification*

EN 13162, *Thermal insulation products for buildings - Factory made mineral wool (MW) products - Specification*